

BPAT



Update

JUNE 2000

BPAT Program Prepares for a Busy 2000 Hurricane Season

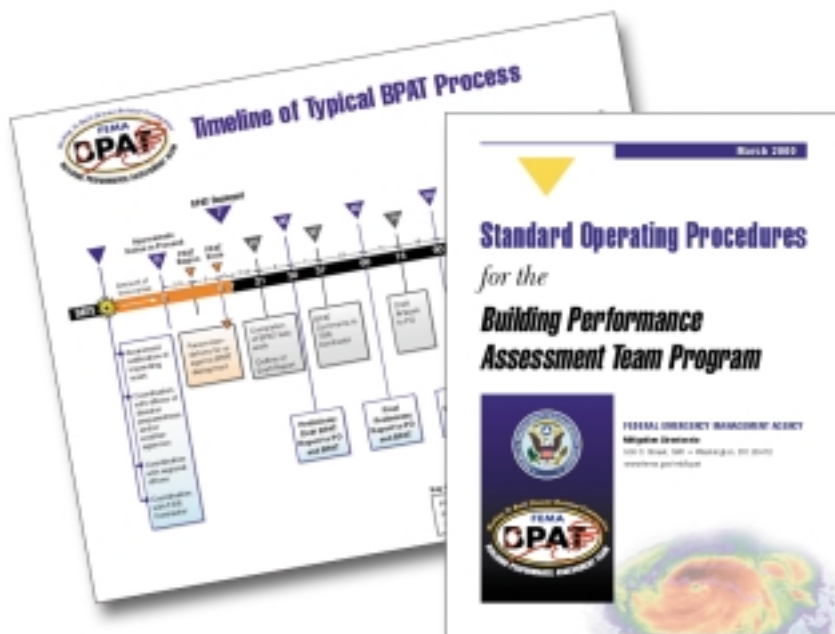
An above average level of hurricane activity is expected for the 2000 season.

The BPAT program is preparing for another active hurricane season. Predictions from Dr. William Gray, Professor of Atmospheric Science at Colorado State University, indicated that an above average level of hurricane activity is expected for the 2000 season. Dr. Gray and co-authors make an Atlantic Seasonal Hurricane Forecast annually. Atlantic Hurricane

Season officially occurs from June 1 to November 30. However, the majority of hurricane activity takes place from August to October, and early to mid September is considered 'peak season'.

Although the 2000 hurricane season is expected to be busy, it is not anticipated to be as active as the recent 1999, 1998, 1996 and 1995 seasons. Dr. Gray and co-authors

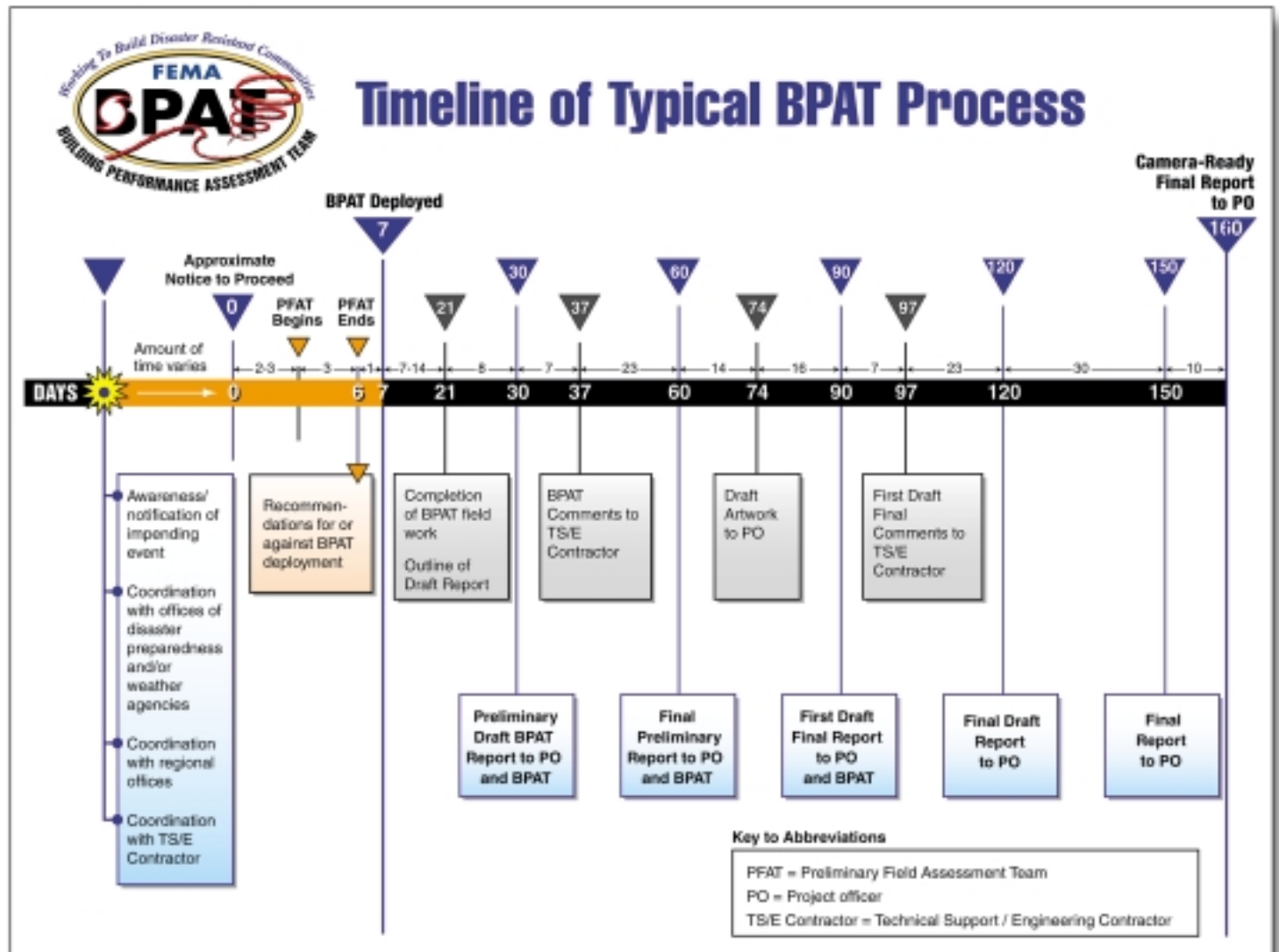
"Busy 2000 Hurricane Season," continued on page 6



BPAT Standard Operating Procedure Document Completed

FEMA has recently completed the BPAT Standard Operating Procedure (SOP). This SOP is a proactive and comprehensive approach to the planning, pre-deployment, deployment and field assessment, and post-deployment functions of a BPAT. Under this approach, whenever possible, the process for determining the need for assembling and deploying a BPAT begins well in advance of the disaster event itself, and the potential members of the BPAT will have already been identified, qualified, and placed on "standby" for deployment by FEMA. To consistently meet these objectives, and to address the need for coordination among the Federal, state, local, and private entities that may be called upon to serve on a BPAT, FEMA has developed this SOP. The SOP

"BPAT SOP Completed," continued on page 2



describes the major components of the BPAT process, from pre-disaster planning activities, through deployment of BPATs, to the final report preparation and post-disaster follow-up activities.

Included in the SOP is the BPAT Pre-deployment Package (Appendix A). FEMA created this document to increase the efficiency of the BPAT process, particularly the procurement of expert services and the deployment of BPATs to the field. FEMA has developed this standardized BPAT Pre-deployment Package to address some commonly asked questions. This package is intended for subcontractors, BPAT roster members, and other potential members of BPATs such as Federal employees "mission-assigned" to the BPAT by FEMA.

Some of the Q and A's include:

- When will I know whether FEMA is going to form and deploy a BPAT?
- When should I book my airline ticket? Who pays for it? How am I reimbursed for hotel, meals, etc.?
- What rate will FEMA pay subcontractors?
- What type of equipment should I take?

The SOP and the Predeployment Package can be found on the BPAT web site at www.fema.gov/mit/bpat/sop

Director Witt Discusses Findings of the Recent BPAT Report

On March 28th FEMA Director James Lee Witt announced recommendations homeowners, businesses, and communities can take to help reduce the devastating effects of high winds associated with tornadoes. The recommendations are the result of the BPATs' assessment of the damage from the May 3, 1999 outbreak of tornadoes that hit parts of Oklahoma and Kansas. [For a digital copy the BPAT report, see the BPAT website at www.fema.gov/mit/bpat].

"We now know that there is much we can do to build stronger structures that will stand up even if they are near the direct path of a violent tornado - or even in the direct path of weaker tornadoes. We have found that much of the needless destruction, and the misery it brings, can be stopped," said Director Witt. "We cannot control the weather, but we can, in many cases control its effects on people."

At the press conference, Director Witt appealed to homeowners, business and community leaders regarding disaster prevention and tornadoes to do the following:

"We cannot control the weather, but we can, in many cases control its effects on people."

**—James Lee Witt,
FEMA Director**



- FEMA urges local officials in tornado prone areas to help their communities come through a tornado event by adopting, following and rigorously enforcing the latest model building codes and national consensus wind engineering standards.
- FEMA urges local officials in tornado areas to take steps to ensure that manufactured homes are installed and secured properly.
- FEMA urges insurance companies to offer lower rates to people who reduce their risks by securely anchoring their manufactured homes - or even better, put them on a permanent foundation.
- FEMA urges homeowners in tornado states to find out whether or not their homes meet the most recent model building codes and standards. And if not - if it is at all possible, to upgrade their home to meet the newest standards.
- Have an inspector look at the garage door - especially if it is a double-wide door. Bring it up to or exceed the code.
- If a masonry chimney is higher than six feet above your roof -- retrofit with continuous vertical reinforcing steel in corners to help resist high winds.

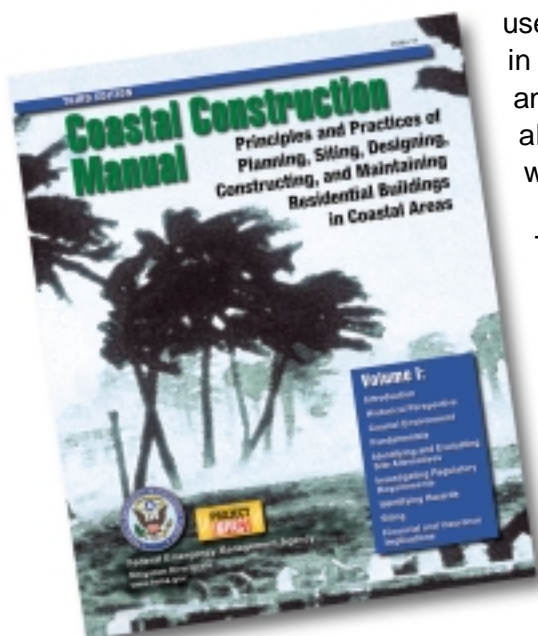
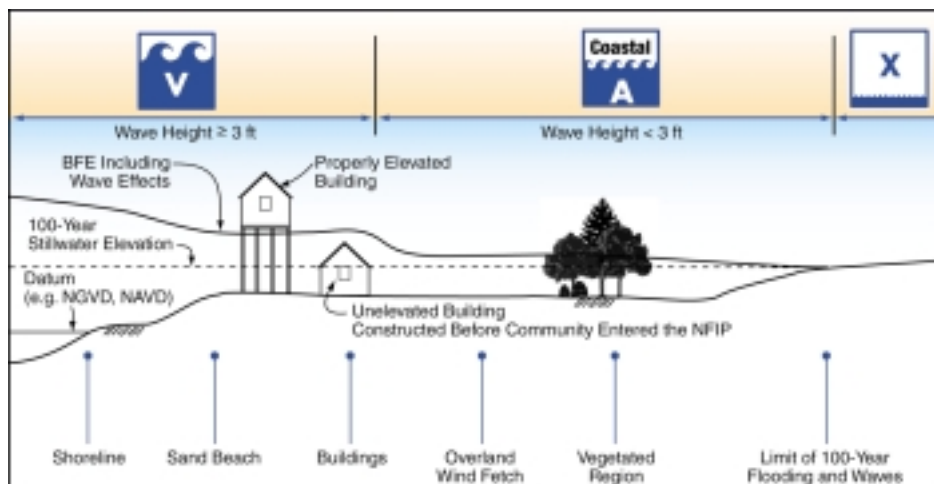
"Director Witt," continued on page 7

Coastal Construction Manual

Principles and Practices of Planning, Siting, Designing, Constructing, and Maintaining Residential Buildings in Coastal Areas

FEMA 55

This summer, FEMA will release its new Coastal Construction Manual, an updated and expanded version of the manual first issued in 1985. The new Coastal Construction Manual is intended to help design professionals, state and local officials, and builders mitigate natural hazards to one- to four-family residential buildings in coastal areas. It presents state-of-the-art engineering techniques for siting, design, construction, and maintenance aimed at reducing damage from natural hazard events, including hurricanes, northeasters, and other coastal storms. Particular emphasis is placed on mitigating the simultaneous effects of high-velocity flow, wave action, debris impact, high winds, storm-induced and long-term erosion, and storm-induced scour. The manual also addresses multi-hazard issues such as the use of open foundations for buildings in seismically active coastal areas and the selection of building materials resistant to damage by water, windborne debris, and fire.



Chapter 2: Historical Perspective – A history of selected coastal hazard events—from the 1900 hurricane that struck Galveston, Texas, to Hurricane Georges, which struck Puerto Rico and the U.S. Gulf coast in 1998—including descriptions and photographs of flood, wind, and tsunami damage; findings of post-event evaluations; documentation of successful building performance; and a discussion of the lessons learned.

Chapter 3: Coastal Environment

– An introduction to coastal processes, coastal geomorphology, and coastal hazards, including regional variations within the U.S. and its territories and the determination of wave height and wave runoff elevations in FEMA Flood Insurance Studies.

Chapter 4: Fundamentals – An overview of acceptable levels of risk; tradeoffs in decisions concerning siting, design, construction, and maintenance; and cost and insurance implications

Chapter 5: Identifying and Evaluating Site Alternatives – Guidance for identifying suitable sites for coastal residential buildings, compiling property information and other information on which to base an evaluation of the site, and evaluating the effects of hazards.

Chapter 6: Investigating Regulatory Requirements – An overview of building codes—including the

“CCM,” continued on page 5

“CCM,” continued from page 4

2000 versions of the International Building Code and International Residential Code—and Federal, state, and local regulations. The National Flood Insurance Program, Coastal Barrier Resources Act, and Coastal Zone Management programs are discussed.

Chapter 7: Identifying Hazards – Descriptions of hazards that influence the siting, design, and construction of coastal buildings: coastal storms, storm-induced and long-term erosion, tsunamis, and earthquakes.

Chapter 8: Siting – Explanation of the factors that should be considered in the selection of building sites, including small parcels within developed areas, large parcels of undeveloped land, and redevelopment sites. Placement of the building on the site is also addressed.

Chapter 9: Financial and Insurance Implications – Explanations of short-term and lifecycle costs associated with alternative decisions regarding siting, design, and construction, including hazard insurance and the effects that such decisions have on insurance purchase requirements and rates.

Volume II

Chapter 10: Introduction to Volume II

Chapter 11: Determining Site Specific Loads – Detailed guidance regarding the calculation of loads, including those from high winds, flooding, seismic events, and tsunamis. Load combinations are addressed and example problems are presented to demonstrate how the



Hurricane Bonnie (1998).
Overwash on Topsail
Island, North Carolina.

Photograph by Jamie Moncrief,
Wilmington Morning Star. Copyright
1998, Wilmington Star-News, Inc

techniques described in the manual can be applied to real-world coastal construction situations.

Chapter 12: Designing the Building – Step-by-step guidance for designing a coastal building to withstand the expected flood, wind, and seismic loads. Topics covered include structural failure modes, load paths, building systems, application of loads, structural connections, the building envelope, and utilities.

Chapter 13: Constructing the Building –

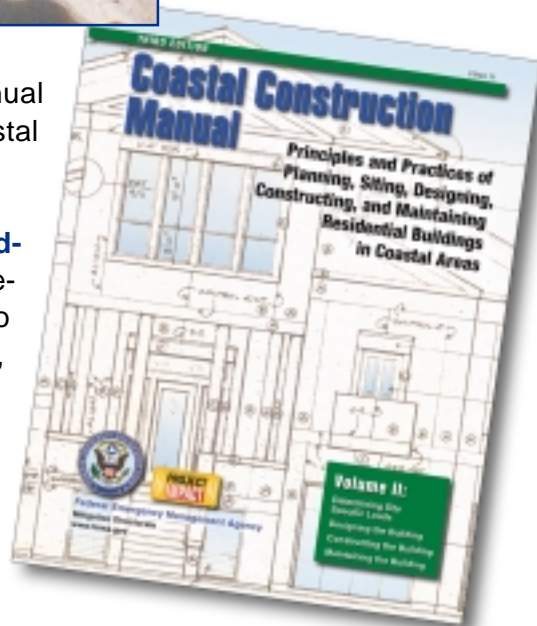
Guidance concerning the construction of the foundation, structural frame, and building envelope, including the selection and use of construction materials.

Chapter 14: Maintaining the Building – An explanation of special maintenance concerns for new and existing buildings in coastal areas. Methods to reduce damage from corrosion, rot, fatigue, and weathering are provided.

Volume III

The 12 appendixes in Volume III present supplementary information, such as lists of FEMA regional offices and state agencies that can provide additional technical and regulatory guidance, Internet information sources, examples of state and community hazard studies and maps, NFIP Technical Bulletins relevant to coastal construction, and guidance concerning the construction of dune walkovers, durability of construction materials in coastal environments, attachment of galvanized roofing, and design of swimming pools to be located in Coastal High Hazard Areas (V zones).

The final manual will be distributed in hardcopy form (pages, divider tabs, covers, and spines) produced for use with 1-1/2-inch 3-ring binders. Later in 2000, FEMA will also issue the manual in the form of an interactive CD ROM based on the PDF file format.



completed their initial forecast for the 2000 season in early December 1999. The forecast is expected to be updated in April, at the beginning of hurricane season in June, and again in August. The forecast's predictions are highlighted in the following tables.

2000 Atlantic Hurricane Frequency of Occurrence Predictions

Hurricane Event	2000 Season Quantity	Average ¹ Quantity
Named Storms²	11	9.3
Hurricanes	7	5.8
Intense Hurricanes³	3	2.2

¹Based on storm data for 1970-1994.

²Tropical storms or hurricanes

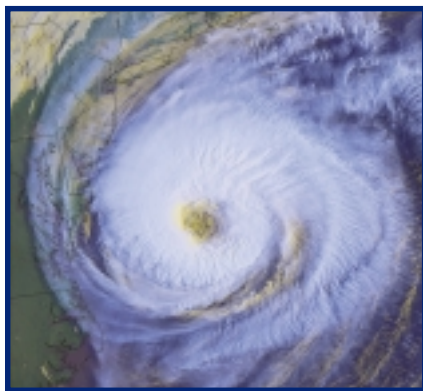
³A hurricane with a category 3-5 on the Saffir/Simpson scale. A Category 3 hurricane has 111-130 mph sustained winds.

2000 Probability (%) of Intense Atlantic Hurricane Landfall

Hurricane Event	2000 Probability (%)	Average ¹ Probability (%)
Entire U.S. Coastline	52	66
U.S. East Coast w/ Florida Peninsula	31	45
U.S. Gulf Coast from Florida Panhandle to Brownsville, TX	30	37

¹Based on storm data for the last 100 years.

The 2000 forecast estimates that there will be 7 hurricanes with 3 of them being Intense Hurricanes. There is a 52% probability that an Intense Hurricane will make landfall along the U.S. Coastline during the 2000 season. These numbers are slightly lower than last year's occurrences. During the 1999 season there were 8 hurricanes, 5 of which were Intense Hurricanes; all of these hurricanes were Category 4 storms (sustained wind speeds of 131-155 mph). The following table shows Dr. Gray's predictions for the 1999 Atlantic Hurricane Season and the actual occurrences. The forecast was accurate to within 1-2 storms for named storms, hurricanes and intense hurricanes.



1999 Atlantic Hurricane Frequency of Occurrence Predictions and Actual

Hurricane Event	Dr. Grey's 1999 Predictions	1999 Actual Occurrences
Named Storms²	14	12
Hurricanes	9	8
Intense Hurricanes (category 3-5)	4	5

The recent trend (1995-present) of active hurricane seasons has prompted meteorological scientists to explore the possibility that hurricane activity occurs in cycles. Recent publications by Dr. Gray, Dr. Christopher Landsea of NOAA's Hurricane Research Division and co-authors describe the possibility that Atlantic hurricane activity goes through 'active' and 'non-active' cycles. From the 1970's to the early 1990's hurricane activity was relatively low compared to the hurricane activity from the late 1920's through the 1960's. Due to the recent increase in hurricane activity (beginning in the 1995 hurricane season), these scientists have hypothesized that we may be beginning another period of extreme activity that could last approximately 25-40 years. However, it is important to note that even during the 'non-active' periods, intense hurricanes, such as Hurricane Andrew in 1992, can still occur resulting in significant numbers of deaths and injuries as well as severe and costly damage.

"Busy 2000 Hurricane Season," continued on page 7

Potential BPAT members should be aware of hurricane activity. If a BPAT is to be deployed, the BPAT contractor will contact team members approximately 1-3 days in advance to authorize team members to travel to the specified destination at a designated time. During the hurricane season, there are several on-line sources that allow potential team members to track tropical storms and hurricanes and keep abreast of the most current information. These sites provide storm tracking information as well as real-time weather data, and hurricane landfall location probabilities. The following table provides addresses for some of these sites and lists the types of information available at each site.

Hurricane Tracking Web Sites

National Hurricane Center

www.nhc.noaa.gov

Tropical weather forecasts, warnings and analyses

National Weather Service Hurricane Webpage

www.nws.fsu.edu/tropical

Hurricane tracking, satellite imagery, predictions

National Data Buoy Center

www.ndbc.noaa.gov

Real-time weather data at individual buoys

Atlantic Tropical Weather Center

www.atc.org/default.html

Caribbean Hurricane Network

www.gobeach.com/hurr.htm

Local weather reports

Central Atlantic Storm Investigators

www.weatherwatchers.org/tropical/surface/index2.html

"Director Witt," continued from page 3

- Make sure door frames are anchored strongly to the house. Double doors can be very dangerous in high winds if they are not securely fastened.
- Make sure that architectural features of your home are designed, manufactured and installed to limit the creation of windborne debris.
- FEMA urges businesses in tornado areas to use construction techniques that have been perfected in coastal regions to limit hurricane damage.
- Make sure buildings meet or exceed current model building code requirements.
- Make sure garage doors comply with the latest national wind loads standards. Retrofit existing garage doors to improve their resistance against high winds – especially double-wide garage doors.

BPAT Program Highlighted at National Conference on Tornadoes

From April 30 to May 3, 2000 a national symposium on the effects of tornadoes was hosted by the College of Geosciences, University of Oklahoma and Director of Oklahoma Weather Center Programs in Oklahoma City, Oklahoma. The title of the symposium was the *National Symposium on the Great Plains Tornado Outbreak of 3 May 1999: Toward a Unified Approach of Understanding, Prediction, Warning, Response, and Recovery*. Meteorologists, Scientists, Epidemiologists, Engineers, Architects, and shelter manufacturers attended the event and presented papers on studies that have been performed on the Great Plains Tornado Outbreak of 1998.

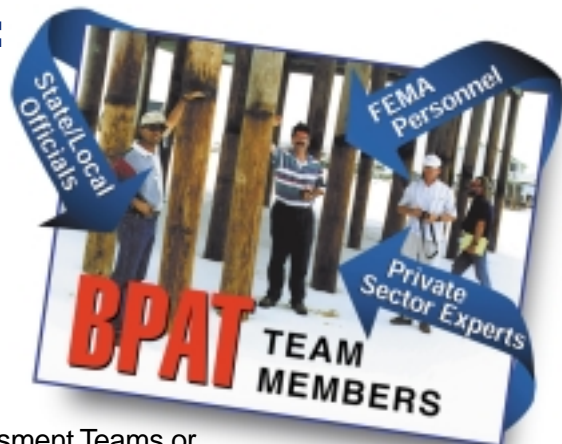
FEMA, a sponsor of the event, delivered presentations on recent FEMA projects including the recent tornado BPAT (FEMA 342). Other presentations included were FEMA 320: *Taking Shelter From the Storm: Building a Safe Room Inside Your House*, and *The FEMA Community Shelter Project*. Clifford Oliver, Chief of the Building Sciences and Assessment Branch was a panelist in the second panel discussion of the symposium: The Future of Shelter Technology.

FEMA also participated in the shelter vendor area promoting the success of Project Impact, the BPAT Program, and the July 2000 release of the new FEMA publication for engineers and architects, FEMA 361: *Design and Construction Guidance for Community Shelters*.

YOU Can Become Part of the BPAT Program

Experts are Needed in the Following Fields:

- Structural and Civil Engineering
- Building Design and Construction
- Coastal Construction
- Flood-, Wind-, and Earthquake-Resistant Design and Construction
- Shoreline and Coastal Erosion
- Building Inspection
- Building Code Development and Enforcement



Are you interested in serving on FEMA Building Performance Assessment Teams or supporting other hazard mitigation activities carried out by FEMA? If you are an expert in one of the fields listed above and can be available for temporary field assignments on short notice, please let us know.

Fill out the form below and return it by mail to:

Greenhorne & O'Mara, Inc.

9001 Edmonston Road

Greenbelt, MD 20770

Attn: Eric Letvin, or you may email your information to eletvin@g-and-o.com.

Name: _____

Expertise: _____

Company/Affiliation: _____

Street Address: _____

City: _____ State: _____ Zip: _____

Phone: () _____ Fax: () _____

Federal Emergency Management Agency

500 C St. SW.

Washington, DC 20472

MT-AO Room 411

